The TDMA Roadmap to 3G using GSM


By
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Market Strategy
Ericsson Radio Systems AB
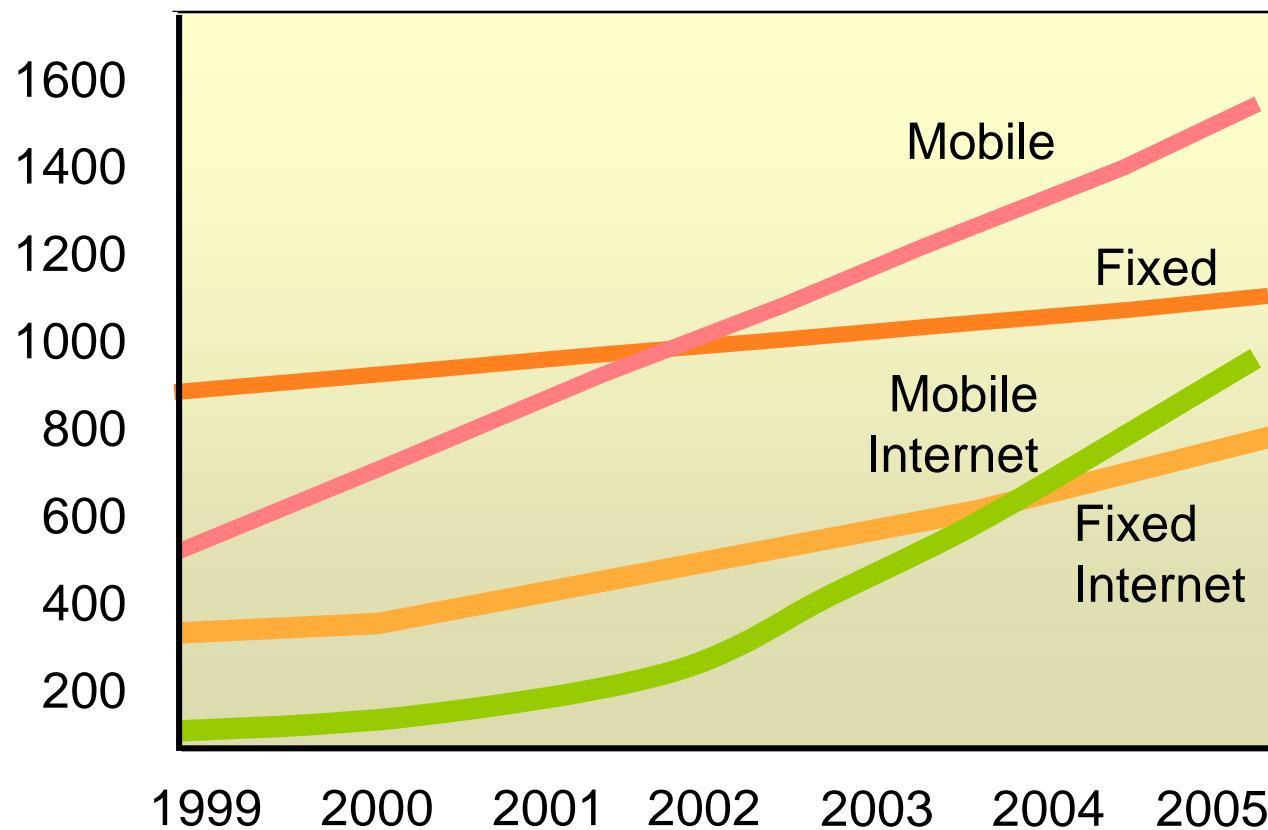
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Outline

- Market overview
- TDMA to GSM migration
  - Strategies
 - Solutions
- GSM-WCDMA evolution
  - Seamless network
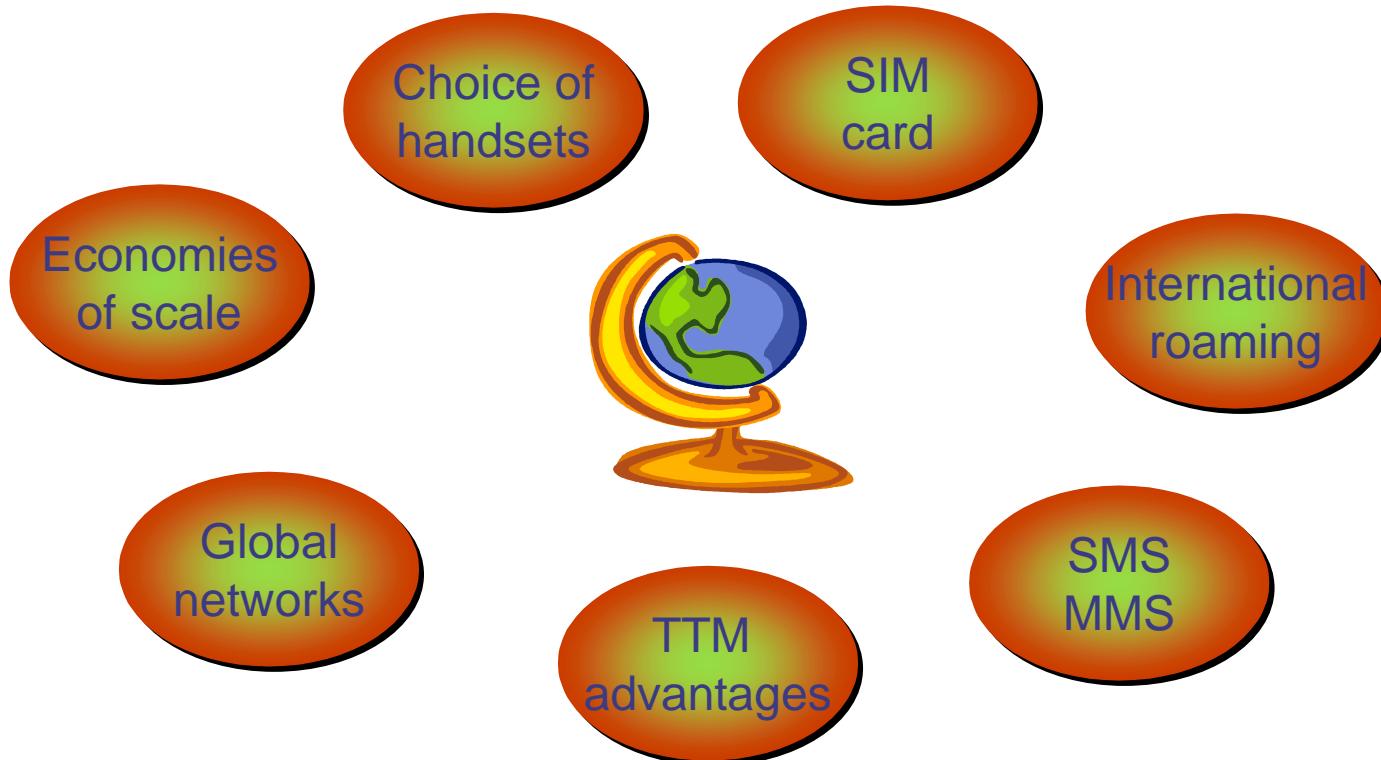
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World-wide trends

Million Subscribers
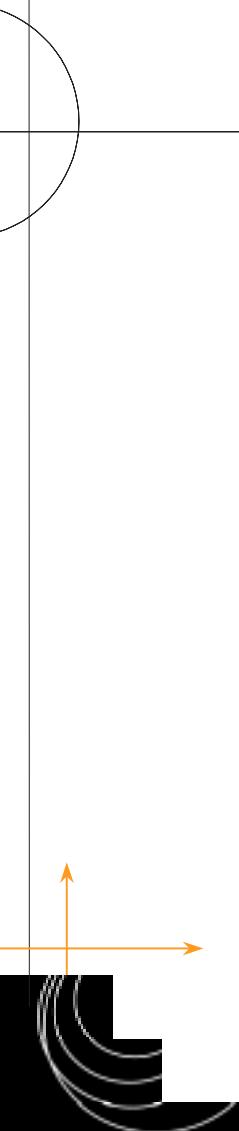
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GSM-WCDMA

The 3G path of choice

- Choice of handsets
- SIM card
- Economies of scale
- International roaming
- Global networks
- TTM advantages
- SMS MMS

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TDMA to GSM migration Strategies

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Many combinations -
Same fundamentals
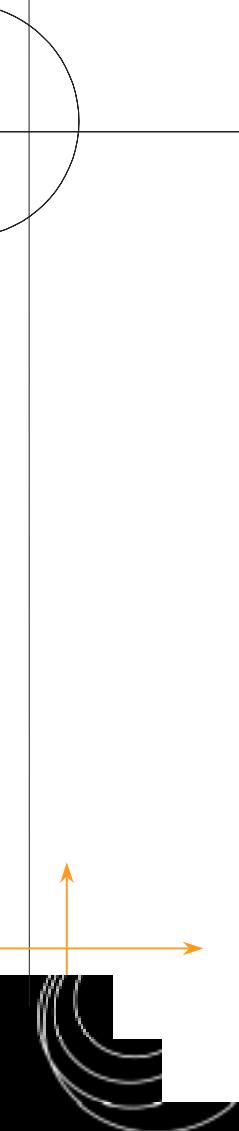
GSM 1900

GSM 1800
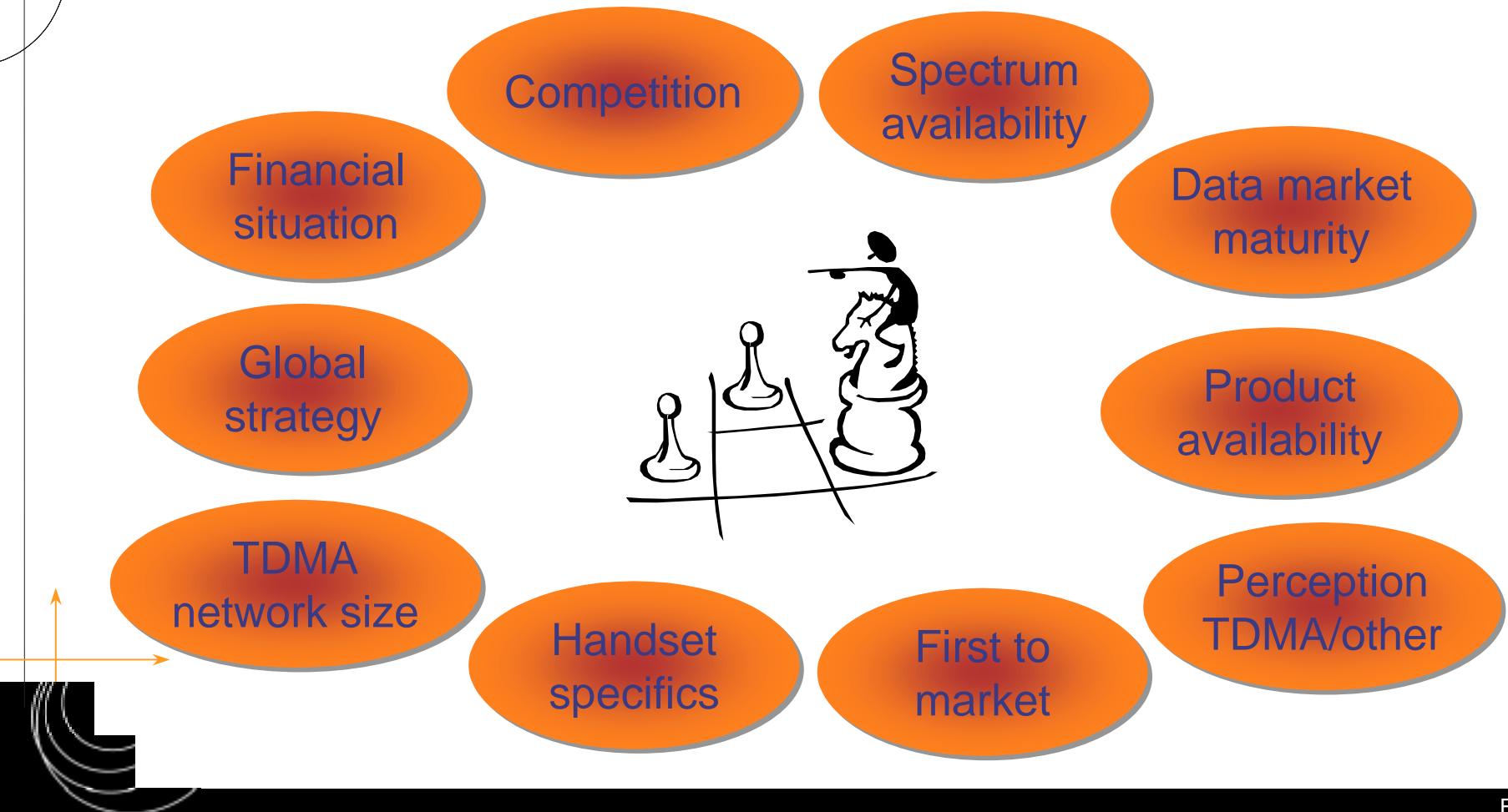
GSM 800

TDMA 1900

TDMA 850

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Factors impacting migration strategies

Competition

Spectrum availability

Financial situation

Data market maturity

Global strategy

Product availability

TDMA network size

Perception TDMA/other

Handset specifics

First to market

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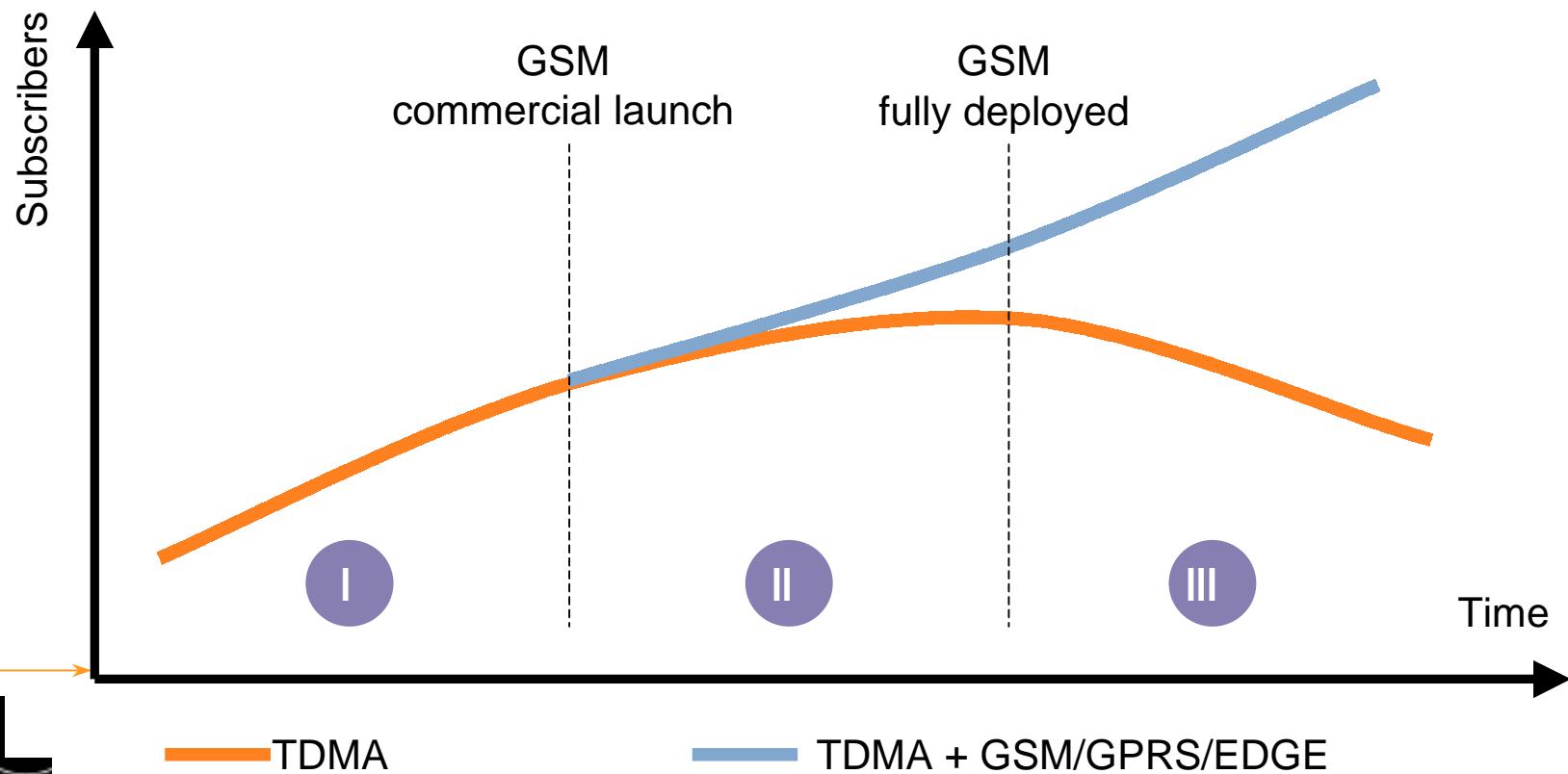
Migration strategies

- Future Introduction
  - Deploy GSM/GPRS after 1-2 years
- Parallel Existence

  - TDMA and GSM/GPRS networks grown and marketed in parallel for next 1-4 years (or more)
- Aggressive Deployment

  - Within 1-3 years of launching GSM/GPRS services, most TDMA subscribers will be migrated

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3 consecutive migration phases

TDMA & GSM subscriber base growth

GSM
commercial launch

GSM
fully deployed

Subscribers

Time

I

II

III

TDMA   TDMA + GSM/GPRS/EDGE

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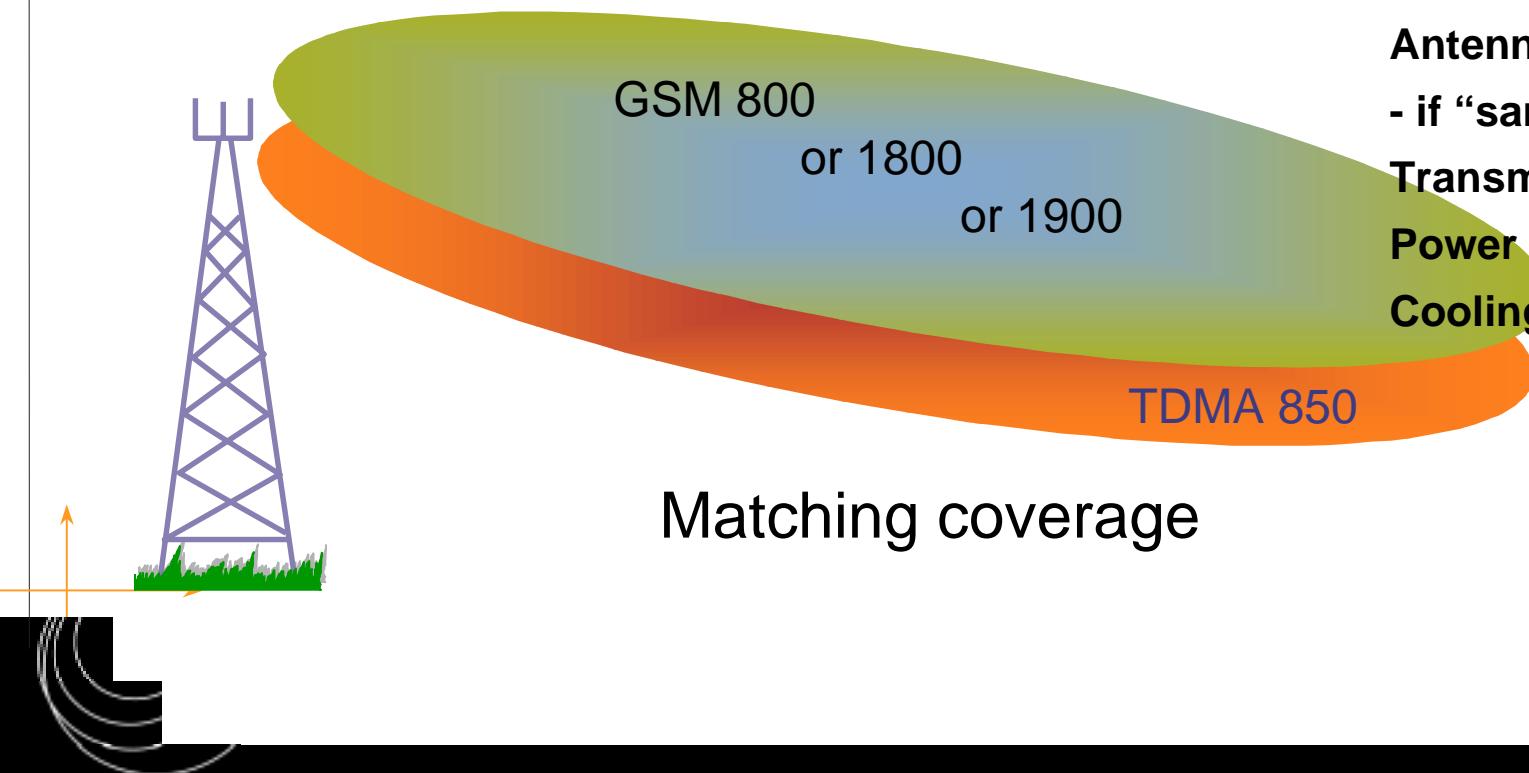
TDMA to GSM migration
Solutions

Radio base station co-siting

Coverage/roaming

Spectrum optimization

Subscriber migration

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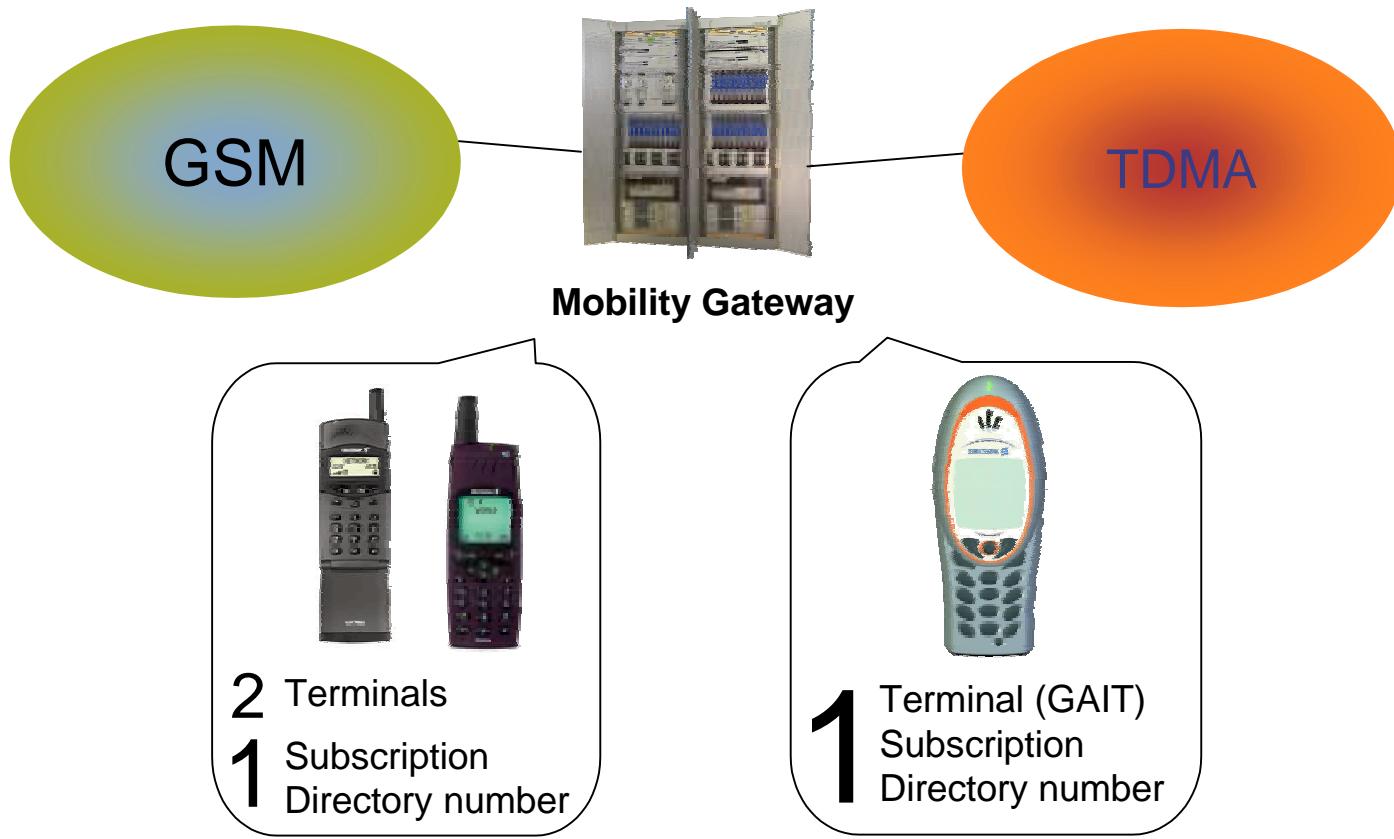
TDMA to GSM migration
RBS Co-siting

Sites, towers

Feeders

Antennas

- if "same" frequency

Transmission

Power

Cooling

GSM 800

or 1800

or 1900

TDMA 850

Matching coverage

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TDMA to GSM migration
Coverage/Roaming

GSM

TDMA

Mobility Gateway

2 Terminals
**1** Subscription
Directory number

1 Terminal (GAIT)
Subscription
Directory number

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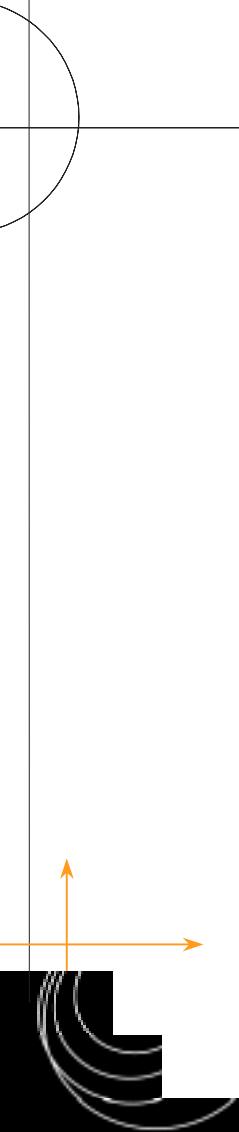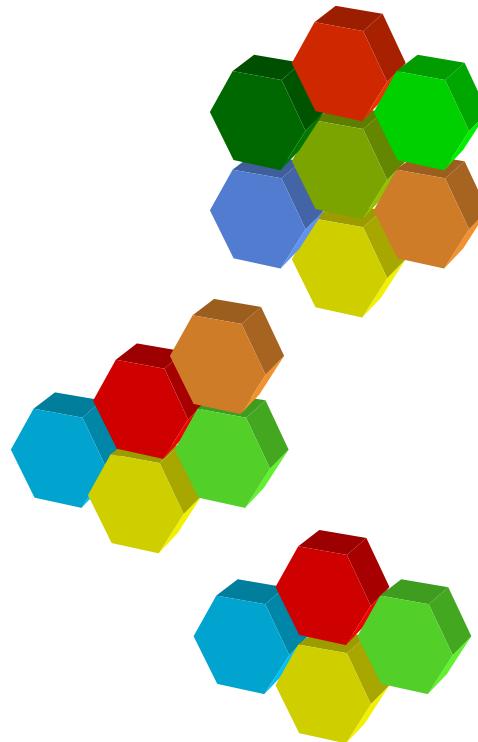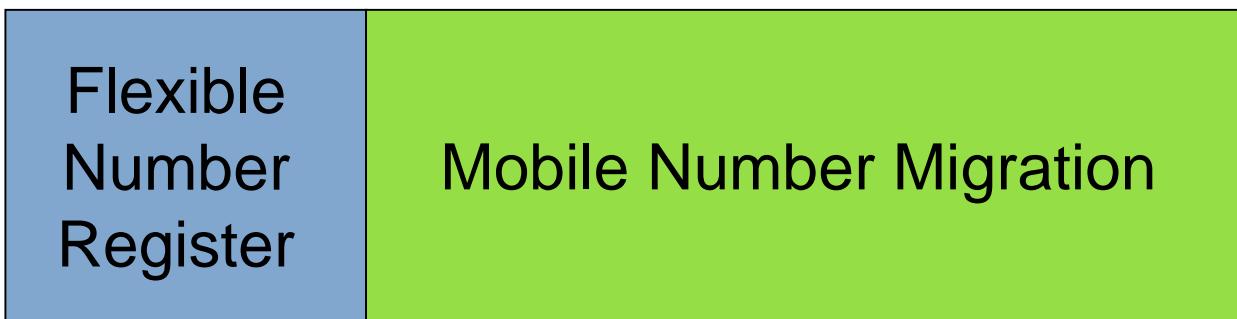
TDMA to GSM migration
Spectrum optimization

- Moving from AMPS to TDMA

- Frequency reuse patterns
  - 7/21 to 5/15
  - 5/15 to 4/12
  - up 90% capacity gain
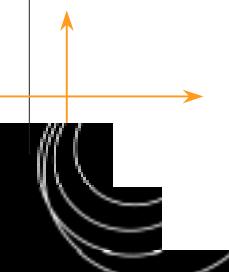
TDMA to GSM migration

Subscriber migration

Flexible Number Register	Mobile Number Migration
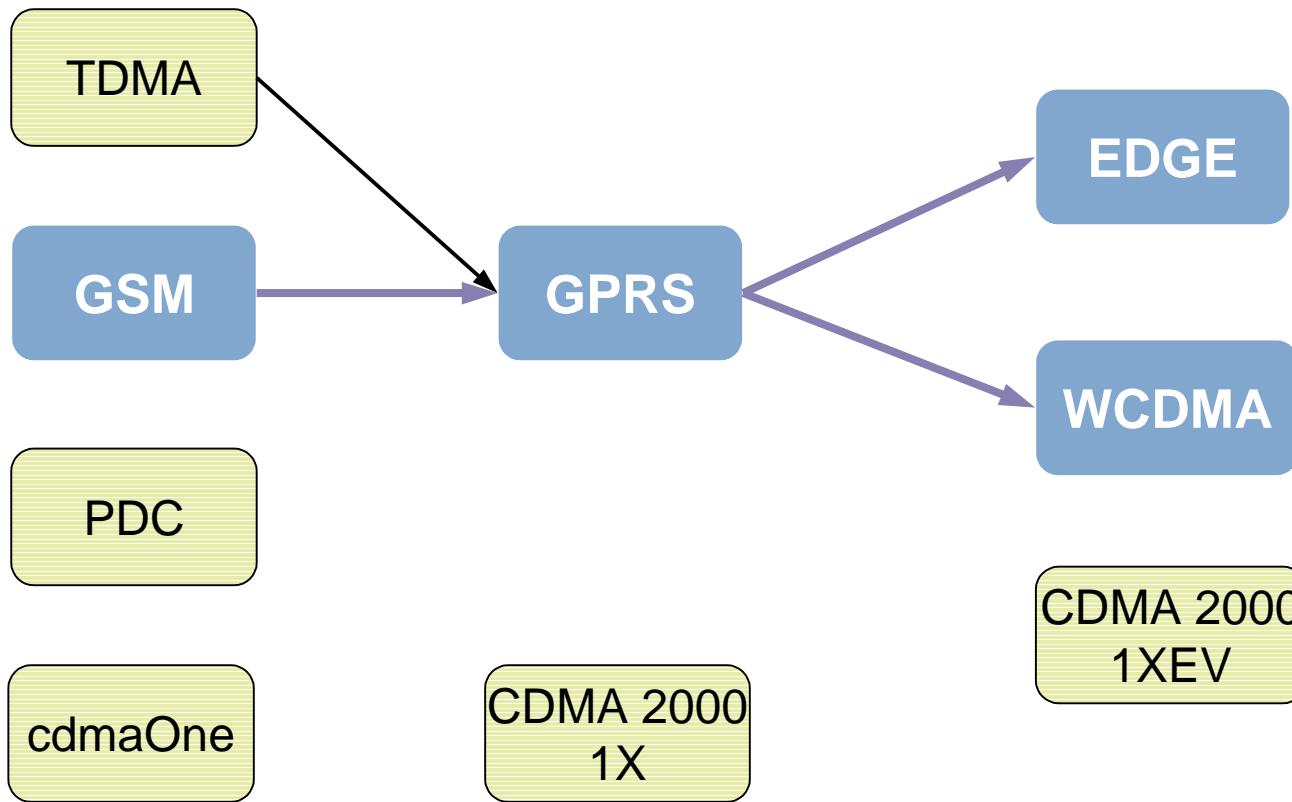
End-user migrates to GSM network keeping same (TDMA) directory number

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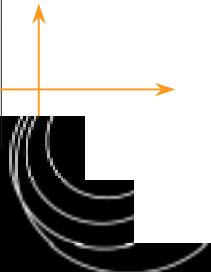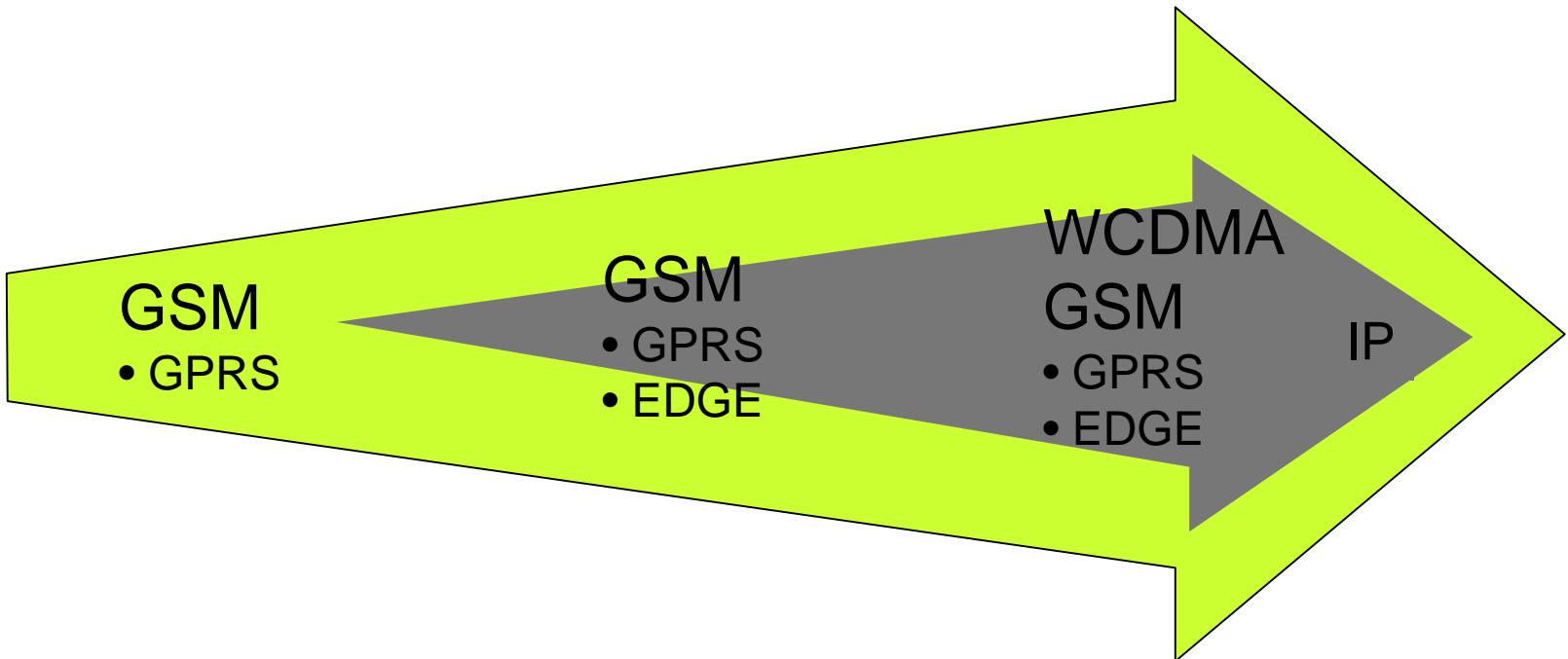
GSM-WCDMA evolution

The Seamless Network

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# Entering the 3G era with GSM - Revolutions?

TDMA

GSM

PDC

cdmaOne

GPRS

CDMA 2000 1X

EDGE

WCDMA

CDMA 2000 1XEV

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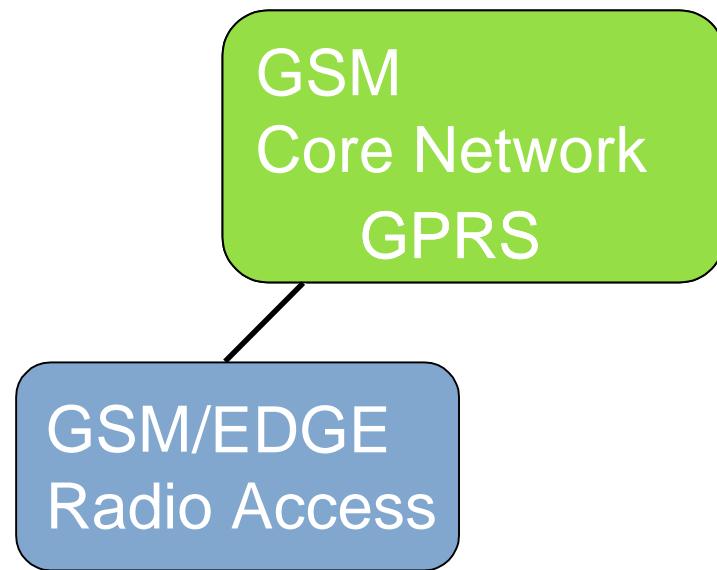
Entering the 3G era with GSM - Evolutions!

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GSM
- GPRS

GSM
- GPRS
- EDGE

WCDMA GSM
- GPRS
- EDGE

IP

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EDGE - Introducing 3G

GSM/GPRS 800/900/1800/1900
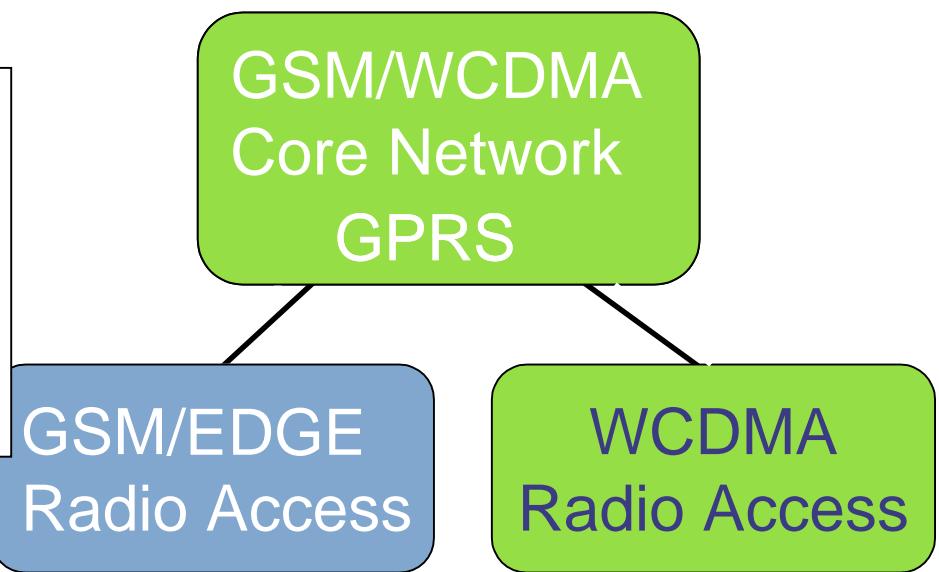
- **3G services in GSM spectrum**
- GPRS capacity x3
- Rapid coverage

GSM Core Network GPRS

GSM/EDGE Radio Access

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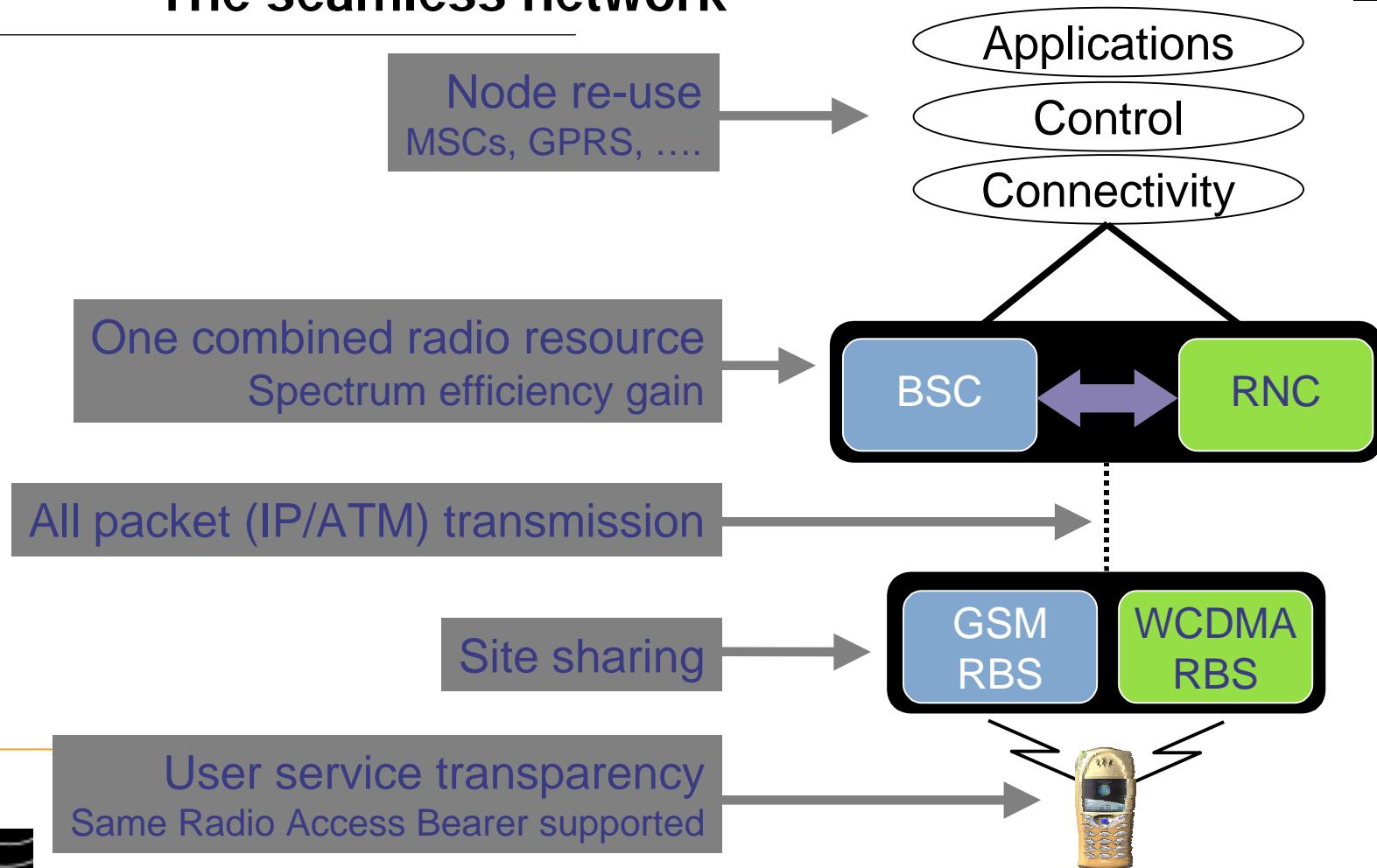
WCDMA - Expanding 3G
2 GHz (1.9-2.1) or other

- **More capacity (voice and data)**
- **Higher data rates**
- **Multiple sessions**

GSM/WCDMA Core Network GPRS

GSM/EDGE Radio Access

WCDMA Radio Access

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The seamless network

Network Management

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Node re-use
MSCs, GPRS, ….

Applications

Control

Connectivity

One combined radio resource
Spectrum efficiency gain

BSC ⟷ RNC

All packet (IP/ATM) transmission

Site sharing

GSM RBS | WCDMA RBS

User service transparency
Same Radio Access Bearer supported

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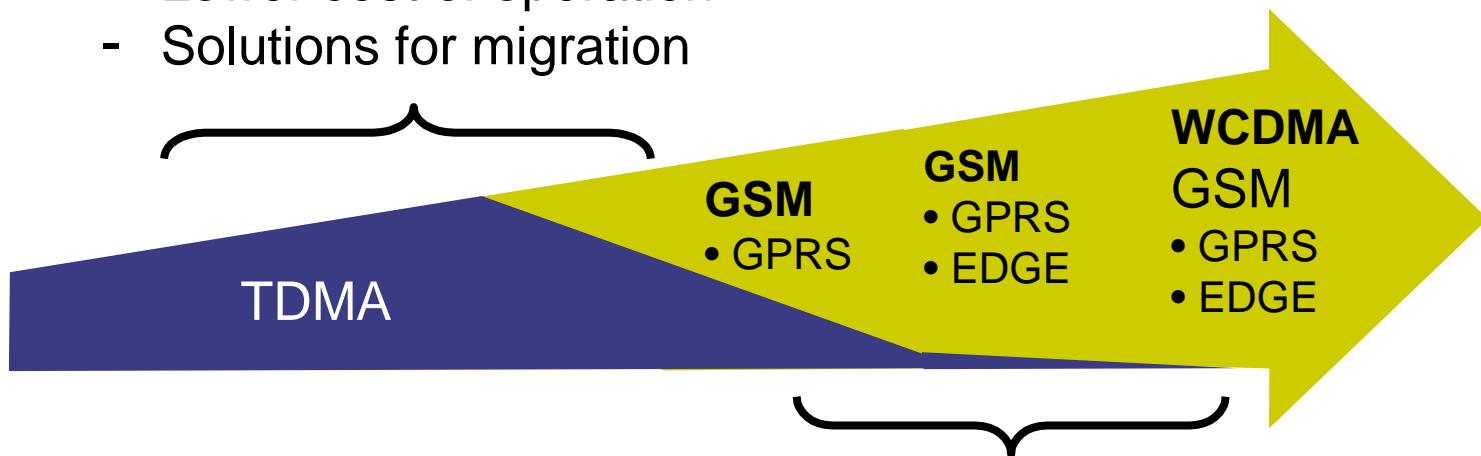
3G Applications

3G is Mobile Internet, but also capacity and voice

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TDMA to 3G using GSM

GSA

- TDMA Roadmap
  - Continued success
  - Lower cost of operation
  - Solutions for migration

GSM
- GPRS

GSM
- GPRS
- EDGE

WCDMA
GSM
- GPRS
- EDGE

TDMA

- 3G Evolution
  - A seamless network

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